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(54) **CHIRAL TEMPERATURE GRADIENT FOCUSING**

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(52) **U.S. Cl.** ..... **204/452**; 204/450; 204/451

(58) **Field of Classification Search** ..... 204/450-455, 204/600-605

See application file for complete search history.

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(57) **ABSTRACT**

A method and device are provided for concentrating and separating materials in fluids within a fluidic device having a fluid conduit such as a channel or capillary. The concentration is achieved by balancing the electrophoretic velocity of a material against the bulk flow of fluid in the presence of a temperature gradient. An additive is added to the fluid which interacts with the material and which modifies the normal electrophoretic mobility of the material. Using an appropriate fluid, the temperature gradient can generate a corresponding gradient in the electrophoretic velocity so that the electrophoretic and bulk velocities sum to zero at a unique position along the conduit and the material will be focused at that position. The method and device may be adapted for use with a variety of materials including fluorescent dyes, amino acids, proteins, DNA and to concentrate a dilute material.

**29 Claims, 8 Drawing Sheets**

